

TO: Director, National Institute for Occupational Safety and Health

FROM: California Fatality Assessment and Control Evaluation (FACE) Program

SUBJECT: A construction flag person dies after being backed over by a truck

SUMMARY
California FACE Report # 00CA006

A 27 year-old male construction flag person died when a tractor-trailer side dump truck backed over him. The truck had just entered the #1 lane (closest to the median), which had been divided off from the rest of the lanes with tubular markers and was backing into position to dump a load of dirt onto the median. The decedent had just allowed the dump truck into the #1 lane. The decedent was wearing an orange reflective vest and hardhat at the time of the incident. The dump truck's back-up alarm was operational and functioning properly. The truck traveled only a few feet in reverse before backing over the decedent. The driver of the truck stated he looked into both of his tractor's side rear view mirrors and did not see the decedent. The decedent had his back to the vehicle.

The CA/FACE investigator determined that, in order to prevent future occurrences, employers should, as part of their Injury and Illness Prevention Program (IIPP):

- Require drivers to get out of the cab of the vehicle and check the rear of the vehicle for obstructions before backing.
- Use a second person as a spotter when backing heavy equipment with blind spots and in a congested area.
- Consider using additional safety devices for heavy equipment to warn workers of a backing vehicle and to warn drivers when someone is in their blind spot.
- Consider closing down another lane of traffic when the work zone and flagging station occupy the same space.

INTRODUCTION

On May 18, 2000 at approximately 1:20pm, a 26-year-old male construction flag person died from injuries received when a tractor-trailer side dump truck backed over him. The CA/FACE investigator learned of this incident through the State of California's Department of

Industrial Relations, Division of Occupational Safety and Health's Legal Unit on May 23, 2000. On May 24, 2000, the CA/FACE investigator traveled to the incident site and interviewed the superintendent and office manager of the contractor who employed the decedent. The CA/FACE investigator obtained photographs of the incident site and reviewed reports from the local police department and county coroner.

The employer of the decedent was a landscape contractor specializing in street work. At the time of the incident, the company had been in business for over 20 years and employed 330 people on average. The company had been contracted to do grading, landscaping and irrigation to the median of a major road running east and west. The road was built to carry three lanes in each direction. The decedent usually worked as a laborer, but on the day of the incident was working as a flag person controlling traffic at the work site. His responsibilities were to stop traffic using a STOP/SLOW paddle and to direct trucks into the #1 lane to dump their loads of dirt. The decedent had worked for this contractor for four years and had been on this particular job for five days. At the time of the incident, there were three employees from this employer at the work site, all at different locations on the median. The decedent was wearing an orange reflective vest and hardhat at the time of the incident.

The decedent's employer had a safety plan with a written Injury and Illness Prevention Program (IIPP). Training for employees was accomplished mostly through on the job training (OJT). According to the superintendent, the decedent was trained in traffic control by his Spanish-speaking co-workers as he only spoke Spanish. There was documentation to verify this training.

INVESTIGATION

The incident occurred in the #1 eastbound lane of a six-lane east/west road under median construction. There were three lanes eastbound and three lanes westbound. The #1 lanes are the ones bordering the median. The median was being renovated and dirt was brought in via trucks to bring its height up to a desired level. The truck involved in this incident was a 10-wheeler tractor-trailer type side dump with a capacity greater than 2 ½ cubic yards. The #1 lane in both directions was closed off to regular traffic using tubular markers in accordance with standard industry practices outlined in the Manual on Uniform Traffic Control Devices (MUTCD). The road was level and had no obstructions.

On the day of the incident, the decedent was assigned to be the flag person, stopping traffic with a STOP/SLOW paddle, allowing the trucks to enter the #1 lane to dump their load of dirt. The decedent's station was in the #1 lane, next to the tubular markers. As the dump truck approached the work site the decedent would remove one of the tubular markers to allow the truck access into the #1 lane. Once the truck was inside the secured lane, the decedent replaced the tubular marker and continued to monitor the traffic with his back to the truck that just entered. The dump truck driver needed to get as close as possible to the median to dump the load of dirt. After pulling into the #1 lane, the truck driver pulled forward of the actual dump location. He then proceeded to back the truck as close as possible to the median. The driver stated he looked into both of his tractor's side rear view mirrors as he proceeded backwards, approximately 2-3 miles per hour, and did not see the decedent. The driver stated that this was his 27th load of the day and had followed the same procedure prior to dumping on every one of the previous 26 trips. The decedent was directly behind the truck in line with the right side tires, with his back to the truck. As the truck moved backward, it knocked down the decedent and backed over him. Several motorists witnessed the incident and alerted the truck driver to stop backing.

The decedent was lying on the roadway underneath the right side of the trailer. One of the witnesses called 911 and others started performing CPR. Police, ambulance, and paramedics arrived within minutes and the decedent was transported to a local hospital where the attending physician pronounced death at 3:21pm.

CAUSE OF DEATH

The cause of death, according to the coroner's report, was multiple blunt thoracic, abdominal and pelvic traumatic injuries.

RECOMMENDATIONS / DISCUSSION

Recommendation #1: Require drivers to get out of the cab of the vehicle and check the rear of the vehicle for obstructions before backing.

Discussion: Most heavy-duty trucks only have side view mirrors to show the driver what's behind them on the sides of the vehicle, not what is directly behind them. In order to assure that there are no obstructions behind them, a driver needs to physically get out of the cab and check the area directly behind their truck in order to confirm this. Once this is accomplished, then they need to return to the cab, as quickly as possible, and start backing before conditions change. Had the driver taken the time to do this, and inform the decedent he was about to back up, this incident might have been prevented.

Recommendation #2: Use a second person as a spotter when backing heavy equipment with blind spots and in a congested area.

Discussion: The driver must assure visibility whenever backing pieces of equipment with blind spots and in a congested area. Blind spots are those areas a driver cannot see in the side view mirrors. Even when drivers physically check the rear of vehicles before backing, conditions can change unexpectedly, especially in a congested area. Using another employee as a spotter who is in clear view of the driver when backing heavy equipment under these conditions, assures drivers that when conditions change on the work site, they will be given the time to react appropriately. Had a second person been used as a spotter on this jobsite, this incident might have been prevented.

Recommendation #3: Consider using additional safety devices for heavy equipment to warn workers of a backing vehicle in the area and to warn drivers when someone is in their blind spot.

Discussion: Workers on construction sites often work in close proximity to moving heavy equipment. Being exposed on a daily basis to the noise and warning devices of backing equipment can desensitize individuals to the presence of such vehicles. Other devices such as a strobe light or different noises should be considered as additions to the standard back-up alarm to warn workers of a backing vehicle. There are also devices available that can detect the presence of persons in the blind spots of vehicles and provide a warning to the driver. These additions should be considered especially when the standard practice is no longer effective. Employing one of these devices might prevent this type of incident from occurring in the future.

Recommendation #4 Consider closing down another lane of traffic when the work zone and flagging station occupy the same space.

Discussion: Flag persons are required to be at locations on construction sites where they can give effective warning to oncoming traffic. In this particular case, the flagging station was in the barricaded lane that was also being used by the trucks to dump their loads. Flaggers must maintain a safe working distance from the trucks in the work zone and in full view of the driver, as well as a safe working distance from the traffic in the street lanes. When the work zone of the trucks conflict with the work zone of the flaggers, then a new layout of the work zone should be established. In this particular case, another lane of traffic may have been closed to widen the work zone. Had this been considered in the original work plan, this incident might have been prevented.

References:

California Code of Regulations, Vol. 9, Title 8, Subchapter 4, Article 10, Sections 1592

Haapaniemi P (1996) "Will High-Tech Systems Help Drivers Avoid Crashes?" Traffic Safety Vol. 96, No. 5, pp 16-19. National Safety Council, September/October 1996.

Manual on Uniform Traffic Control Devices, Part VI, 1988 Edition, Revision 3, Issued February 19, 1998

Parlay International. Transportation and Traffic Safety 1989, "Backing Up", 1050.012, 1050.078.

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FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The California Department of Health Services, in cooperation with the California Public Health Institute, and the National Institute for Occupational Safety and Health (NIOSH), conducts investigations on work-related fatalities. The goal of this program, known as the California Fatality Assessment and Control Evaluation (CA/FACE), is to prevent fatal work injuries in the future. CA/FACE aims to achieve this goal by studying the work environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

NIOSH funded state-based FACE programs include: Alaska, California, Iowa, Kentucky, Maryland, Massachusetts, Maryland, Minnesota, Missouri, Nebraska, New Jersey, Ohio, Oklahoma, Texas, Washington, West Virginia, and Wisconsin.

Additional information regarding the CA/FACE program is available from:

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